

Research Final Report 2019
OREGON DEPARTMENT OF AGRICULTURE
OAN NURSERY RESEARCH COMMITTEE

Date: Dec 31, 2019

Research project funded for 2018, granted an extension through 2019.

Principle Investigators:

Heather Stoven, Extension Horticulture, Yamhill County; 2050 NE Lafayette Ave, McMinnville, OR
phone:503-434-8910; Fax: 503-472-3054; Heather.stoven@oregonstate.edu

Lloyd Nackley, Assistant Professor, Nursery Research and Extension, Oregon State University, Aurora, OR,
phone: 971-801-0385; E-mail: lloyd.nackley@oregonstate.edu

Neil Bell, Extension Horticulture, Marion and Polk Counties, Oregon State University, 1320 Capitol St NE,
Suite 110, phone: 503-373-3765; E-mail: neil.bell@oregonstate.edu

Title: Evaluating broadleaved evergreen groundcovers for drought tolerant landscapes in the Pacific Northwest

Background: Weed control is the most costly form of pest management in most landscapes. Weed management in the landscape can be accomplished a number of ways, but one of the most effective is the use of evergreen groundcovers. A groundcover shades the soil surface in the same way as a mulch by conserving moisture and suppressing weeds, but also offers ornamental interest through the year. Groundcover plants are especially useful in parking lots, roadsides, and other situations where low maintenance is a requirement.

A number of plants have been used as a groundcover in Northwest landscapes, including coniferous and broadleaf plants. Broadleaf plants offer flowers as well as diverse foliage; of the many broadleaf species utilized worldwide, only a few have been used in Northwest landscapes. These include various *Cotoneaster* species and cultivars, *Arctostaphylos uva-ursi* (Kinnikinnick or Bearberry), *Vinca minor* and *V. major* (Periwinkle), and *Genista lydia* and *G. pilosa* (carpet broom) and *Viburnum davidii*. With the exception of carpet broom, all these species perform better with summer irrigation.

Irrigation is very common in the summer-dry Northwest; however its use promotes problems with summer-annual weeds. Management of these weeds requires either additions of mulch, hand removal, or herbicides. Deletion of irrigation eliminates most of these problems but would mandate use of plants tolerant of summer-dry conditions. Over the last 10 years, several evaluations at the OSU North Willamette Research and Extension Center (NWREC) have focused on growing broadleaved evergreen ornamental plants from several genera, including *Ceanothus*, *Cistus*, *Halimium*, and *Grevillea*. These field evaluations seek to identify those plants able to grow under “low-input” conditions (i.e., without irrigation, fertilizer, or pruning) and still retain good landscape quality. A similar evaluation is currently being conducted on *Arctostaphylos*, which was highlighted in the March, 2017 Digger Magazine, and has led to the inclusion of these species in a number of Oregon nurseries.

Although the previous evaluations of drought-tolerant plants have identified some plants from each genus suitable for use as groundcovers, they have not specifically focused on identifying plants that are best utilized as groundcovers in a comparative study. Furthermore, there are many more drought-tolerant plants in other genera suitable for consideration as groundcovers which are currently not utilized in the Northwest. We propose to establish an evaluation whose primary goal is to evaluate broadleaved evergreen groundcovers for use in un-irrigated landscapes.

Project Objectives

1. Evaluate new drought-tolerant cultivars for suitability in the PNW climate
2. Determine production scheduling for the cultivars to reach a saleable size
3. Provide propagative cuttings from the trial for local nurseries to utilize for sales

Final Results:

Cuttings of 30 species and cultivars of broadleaved evergreen groundcovers (i.e. not including coniferous species) were obtained from a Mediterranean groundcover nursery (Pepiniere Filippi) in Meze, France in October 2017. Upon return the cuttings were stuck at NWREC in community trays using 2:1 perlite:peat mix and dipped in a 1:7 ratio of Dip n' Grow. Plants were well rooted by February 2018 and were potted into 4" pots using Pro-Gro 5F mix, then upshifted to 1 gallon pots in May of 2018. Plants were well-rooted and "saleable" by September 2018.

In November 2018, the established plants in gallon containers were used as stock plants to obtain more cuttings to ensure plants from the trial were all of the same age and size. Additional underutilized plants from local and California nurseries as well as current landscape standards (for comparative purposes) were also propagated at this time so that they also could be added to the trial. After all plants were propagated during winter 2018/2019, they were upshifted to 4" containers in early March 2019, then upshifted again at the end of May to quarts or 2 gal pots (for the rock rose species) depending upon growth. All plants were potted into Pro-Gro 5F mix and top-dressed with the low rate of Harrell's 17-6-12 fertilizer.

Seventy-nine different accessions from 37 different genera were planted into a field at NWREC located adjacent to the Bureau of Reclamation Agrimet weather station at NWREC (<http://www.usbr.gov/pn/agrimet/>) on Sept. 10th, 2019 (See Appendix for plant list). Plants were arranged in a Completely Randomized Design with five replications in the field. Plants were irrigated at planting, but fertilizer and additional irrigation will not be used, allowing evaluation of plants in a low-input scenario. The planting consists of rows spaced 8' apart with an in-row spacing of 5'.

The data to be collected starting in spring 2020 are:

1. Plant height and width (collected annually in spring)
2. Plant form and foliage quality
3. Winter injury data (collected each spring or as required on a 0-5 scale).
4. Flowering data – timing and flower color (collected weekly in season).
5. Pest and disease information

After plant establishment nurseries will be able to collect cuttings from plants that are determined to be successful for the landscape. Results will be shared through trade articles such as "Digger Magazine" as well as other means such as the Northwest Plant Evaluation Program website.

Benefit to Nursery Industry

The Northwest Plant Evaluations program, which started in 2000 has evaluated numerous plant cultivars and species for the Pacific Northwest climate and one of the aims of the program is to introduce new cultivars into the nursery trade at the retail and wholesale level. Fifteen wholesale and retail nurseries have utilized the trials over the last 17 years to obtain cuttings to establish these plants in their own nursery stock and have added these to their nursery sales. Accessions from the evaluations which have thus far been utilized by the nursery industry for sales include: 11 *Hebe* cultivars, 14 *Cistus*, 4 *Halimium*, 1 *Grevillea* and 8 *Arctostaphylos*. Data regarding production timing will assist growers with production schedules and ease the adoption of the new cultivars.



Planted drought tolerant ground cover plot in December 2019.

Appendix: Trial Plant List

<i>Arctostaphylos hookeri</i> 'Buena Vista'	<i>Ceanothus gloriosus</i> var. <i>porrectus</i>	<i>Halimium lasianthum</i> 'Formosum'	<i>Prunus laurocerasus</i> 'Mount Vernon'
<i>Arctostaphylos nevadensis</i> 'Knightii' SBH 103	<i>Cistus</i> 'Snowfire'	<i>Halimium lasianthum</i> 'Sandling'	<i>Rhodanthemum</i> <i>hosmariense</i>
<i>Arctostaphylos nummularia</i> (select form)	<i>Cistus x curvivatus</i>	<i>Helianthemum</i> <i>nummularium</i> 'Ben Ledi'	<i>Ribes viburnifolium</i> 'Catalina Perfume'
<i>Arctostaphylos nummularia</i> 'Bear Belly'	<i>Cistus x dansereau</i> 'Decumbens'	<i>Helianthemum</i> <i>nummularium</i> 'Cheviot'	<i>Rosa</i> (Easy Elegance) Screaming Neon Red
<i>Arctostaphylos nummularia</i> SBH 12165	<i>Cistus x obtusifolius</i>	<i>Helianthemum</i> <i>nummularium</i> 'Henfield Brilliant'	<i>Rosa</i> (Easy Elegance) Yellow Brick Road
<i>Arctostaphylos uva ursi</i> 'Anchor Bay'	<i>Cistusx florentinus</i> 'Tramontane'	<i>Helichrysum heldreichii</i>	<i>Rubus calycinoides</i>
<i>Arctostaphylos uva-ursi</i> 'Green Supreme'	<i>Cistusx pauranthus</i> 'Natacha'	<i>Helichrysum</i> 'Miel et Curry'	<i>Salvia</i> 'Bee's Bliss'
<i>Arctostaphylos uva-ursi</i> 'Massachusetts'	<i>Cistusx pulverulentus</i> 'Sunset'	<i>Helichrysum stoechas</i>	<i>Salvia sonomensis</i> SBH 12232
<i>Arctostaphylos uva-ursi</i> 'Radiant'	<i>Convolvulus cneorum</i> 710-001	<i>Hypericum balearicum</i>	<i>Santolina benthamiana</i>
<i>Arctostaphylos uva-ursi</i> 'Vancouver Jade'	<i>Cotoneaster</i> 'OSUCOT1'	<i>Hypericum tomentosum</i>	<i>Santolina magonica</i>
<i>Atriplex halimius</i>	<i>Cotoneaster</i> <i>glaucophyllus</i>	<i>Ilex crenata</i> 'Helleri'	<i>Santolina viridis</i> 'Primrose Gem'
<i>Baccharis pilularis</i> 'Pistol Pancake'	<i>Cotoneaster</i> H2011-02- 005	<i>Lavandula dentata</i> var. <i>candicans</i>	<i>Satureja gilliesii</i>
<i>Ballota hirsuta</i>	<i>Erica carnea</i> 'Springwood Pink'	<i>Lavandula lanata</i>	<i>Satureja thymbra</i>
<i>Ballota pseudodictamnus</i>	<i>Erica x darleyensis</i> 'Mary Helen'	<i>Lavandula x</i> <i>heterophylla</i> 'Devantville'	<i>Teucrium capitatum</i> ssp. <i>majoricum</i>

<i>Brachyglottis greyi</i>	<i>Erica x darleyensis</i> 'White Pefection'	<i>Lavandula x losae</i>	<i>Thymus capitatus</i>
<i>Buxus sinica</i> 'Tide Hill'	<i>Euonymus fortunei</i> 'Emerald n Gold'	<i>Leptospermum rupestre</i> (low form)	<i>Trachelospermum</i> <i>jasminoides</i> 'Pink Showers'
<i>Callistemon pityoides</i> 'Mt. Kosciusko'	<i>Genista pilosa</i>	<i>Leptospermum rupestre</i> 'Squiggly'	<i>Trachelospermum</i> <i>mandianum</i>
<i>Calluna vulgaris</i> 'Dunneth Lime'	<i>Grevillea australis</i>	<i>Lonicera crassifolia</i>	<i>Vinca</i> 'Merlot'
<i>Ceanothus gloriosus</i> 'Anchor Bay'	<i>Grevillea</i> 'Molonglo'	<i>Lonicera pileata</i> 'Royal Carpet'	<i>Vinca minor</i> 'Bowles'
<i>Ceanothus gloriosus</i> 'Emily Brown'	<i>Grevillea</i> 'Poorinda Leane'	<i>Pittosporum tobira</i> 'Green Compact'	